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tion of a circle of latitude on the sun's surface, and are rarely high enough to be seen as actual projections from his limb. On one occasion, however, the 22d of January last, I had an opportunity of observing a satisfactory confirmation of the idea that they are ridges, or heapings up of the luminous matter; and as the requisite circumstances are extremely rare, I will advert more particularly to the observation. A large bright streak, or *facula*, was observed to run, as usual, nearly parallel to the sun's edge for some distance, and very near it; and then to turn rather abruptly towards the edge and pass over it. The limb was at times very well defined; and when it was most sharp and steady, the bright streak was seen to *project slightly beyond the smooth outline of the limb*, in the manner of a mountain ridge nearly parallel to the sun's equator."

This eye-piece was applied to Mr. Lassell's 20-foot reflector last September, and the sun was examined with the whole of the 24-inch mirror. The eye-piece did not become more than sensibly warm after two hours' exposure to a bright sun.

Mr. Dawes points out the utility of this contrivance in examining the surface of the moon, in observing the occultations of small stars, and the eclipses of *Jupiter's* satellites, and in observing or detecting the faint satellites of planets. By such means, too, *Venus* and *Mercury* may be more pleasantly observed when near the sun; and as the author remarks, "to the practised observer such applications will readily occur," and need not be here insisted on.

Mr. Dawes' eye-piece was constructed by Mr. Dollond according to Mr. Dawes' directions.

Micrometrical Measurements of the Binary Star ξ Ursæ Majoris, and the Double Star Struve 1263, *made at the Observatory, Whitehaven.* By J. F. Miller, F.R.S.

ξ Ursæ Majoris. Magnitudes, 4,5; 5,5. Colours, both white.

Reference.	Position. ° ′	Weight.	No. of Obs.	Distance. ″	Weight.	No. of Obs.	Epoch.
63	122 11	3	9	2·883	3	8	1852·066
66	122 35	3	8	2·859	3	8	·076
67	123 5	1	7				·112
68	122 27	3	8	2·886	2	6	·133
70	122 22	3	8	2·867	2	8	·136
75	121 41	3	8	2·912	3	8	·161
77				2·944	3	9	·169
80	122 16	4	8	2·935	2	5	·180
Means	122 17	20	56	2·898	18	52	1852·129

63. Jan. 24, 1852. Distances between clouds. This is only the third clear night we have had since Dec. 23, 1851.

67. Encke's comet seen at 7 P.M. Midnight; stars dance perpetually, and definition bad; no dependence can be placed upon this set of positions.

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70. A most brilliant aurora, covering three-fourths of the sky; stars dim in consequence.

80. Moon one day past full, but at a low altitude: 11^h to 13^h. This being the last set which I intend to take this season, nearly two hours were devoted to the positions, and extraordinary care bestowed upon each individual measure. I therefore consider the mean of this series to represent the angle as exactly as my skill and means will permit.

ξ *Ursæ* is certainly one of the most interesting and remarkable of the binary systems, and it has, perhaps, been more fully and satisfactorily examined than any other. The following *resumé* of its history shows that it has performed an entire revolution and an eighteenth part of a second cycle since its angular position was first noticed by Sir William Herschel in the spring of 1780, seventy-two years ago. The angular velocity is now diminishing, a necessary consequence of the increase in distance between the companion sun and its primary.

	Position.	Distance.	Epoch.
	° ′	″	
Herschel I.	143 47	3·50	1780·33
Struve	276 35		1820·13
Herschel II. and South	258 27	2·81	1823·29
Struve	238 75	1·747	1826·20
—	213 59	1·671	1829·35
—	195 94	1·750	1832·41
—	184 10	1·875	1834·44
Dawes	171 37	1·920	1836·27
—	165 97		1837·36
Struve	160 38	2·260	1838·43
Smyth	156 9	2·000	1839·23
—	143 2	2·30	1843·16
Struve	140 52	2·526	1844·778
—	138 49	2·620	1846·365
—	131 50	2·700	1847·407
—	128 43	2·752	1848·406
Miller	122 17	2·898	1852·129
Fletcher	119 46	2·924	1852·197

Struve, 1263. Magnitudes, 9; 9,5. Colours, yellowish white.

Reference.	Position.	Weight.	No. of Obs.	Distance.	Weight.	No. of Obs.	Epoch.
	° ′			″			
72	14 46	2	8	20·105	1	10	1852·148
74	15 15	2	9	20·346	1	4	·150
76	15 48	4	8	20·941	4	8	·161
79	16 12	3	8	21·133	2	4	·169
84	16 8	2	3	20·786	3	8	·191
85	16 10	5	8	21·220	5	8	·194
Means	15 50	18	44	20·934	16	42	1852·169

84. Distances taken first; it became clouded before positions were completed.

85. The definition (which has long been very indifferent), is much improved,

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and on the whole these are the best observations which I have obtained of this star. There are three other very small adjacent points, visible only in a dark field. This double star bears but a slight degree of illumination, and a pretty bright night is requisite to bisect the stars accurately in distance.

Subjoined are M. Struve's prior measures :—

	Position.	Distance.	Epoch.	Nights.
	° ′	″		
Struve	359 00	4·86	1828·36	1
—	4 12	5·43	1829·36	2
—	4 95	7·08	1831·31	2
—	7 27	7·455	1832·33	2
—	8 00	7·973	1833·29	3
—	8 40	8·933	1834·36	3
—	9 29	9·595	1835·35	4
—	9 60	10·325	1836·41	2
Miller	15 50	20·934	1852·17	6

On projecting the above measures, it becomes evident that the stars are not physically connected. The great and rapid increase in distance is doubtless the effect of very considerable proper motion in one of the components, and hence this object seems worthy of a rigid scrutiny with the large meridian instruments in different national observatories. This star presents another example that apparent magnitude or lustre is not always, if indeed generally, an indication of proximity to the solar system, and furnishes a hint that in searching for proper motion and sidereal parallax, the stars invisible to the naked eye should by no means be neglected.

March 19. We have now had an uninterrupted continuance of fine weather for more than a month, and a large proportion of clear bright evenings and nights ; yet there has not been a single night in all that period, wherein the air was in a really satisfactory state for astronomical purposes. The stars have been affected by a constant tremor, the definition has been very indifferent, and on many evenings (clear to the eye), so extremely bad, that, as far as micrometrical measurements are concerned, the sky might as well have been covered with clouds. The peculiar flickering or twinkling, which is usually confined to the brighter stars, has of late palsied the whole visible heavenly host almost without intermission. So long a continuance of wretched astronomical weather, with a clear sky, I never remember. The year 1852 has, so far, been most unpropitious to the labours of the astronomer. Rain fell almost without intermission till the 17th of February,* and from that time up to the present, during which the weather has been of the most opposite description (not a drop of rain having fallen), unfavourable atmospheric influences of a different character have proved almost equally fatal to the successful prosecution of delicate astronomical work.

March 29.† With the exception of Monday the 22d, when 0·105 inch of rain fell, the fine, dry, calm weather has continued uninterrupted since the last note was written. The atmosphere, when clear, militates as strongly as ever against the astronomer. Probably the perpetual dancing and moulding of the stars is owing, in a great measure, to the excessive dryness of the lower strata of the air.

During the last ten days, the dew-point has occasionally been as much as 17°, 18°, and even 20°·8, below the temperature of the air. With a single exception, we have now had forty-one days without rain, a circumstance probably without a parallel in the memory of the existing generation in this district.

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* During this period (Jan. 1st to Feb. 17th), 11·56 inches descended at Whitehaven, and 47·70 inches at Seathwaite in the Lake district.

† Some rain fell in the course of the night, 29th–30th.